

DOCUMENT-IDENTIFIER: US 5712195 A
TITLE: Method for making via structure with metallic spacer

ISD:
19980127

DEPR:
FIG. 2a illustrates an implementation of the invention herein, including a semiconductor structure 1 in turn including a semiconductor substrate 2 including a semiconductor (preferably silicon) wafer W covered with an insulating (preferably SiO.sub.2) layer 4, a conductive layer 6 (preferably aluminum), and a multi-layer, non-conductive layer structure 10. Wafer W is a semiconductor wafer made from a material such as silicon or gallium arsenide, for example, and is covered with oxide layer 4 to insulate conductive layer 6 from wafer W. Conductive layer 6 can be fabricated according to a number of well-known conventional techniques. By way of an example and as one preferred embodiment, the first conductive layer 6 is deposited by sputter deposition of **titanium tungsten**, followed by sputter deposition of aluminum or AlCu (for example, at a ratio of approximately 99:1), followed by, a sputter deposition of **titanium tungsten** over the AlCu. Alternatively, layer 6 can simply be a deposited Al layer. Conductive layer 6 is then **patterned** into conductive lines, as is well known to those skilled in the art. As used herein, the term "**patterned**" refers to photolithographic techniques, whereby a **resist** material is applied to the upper surface of layer 6, is exposed to a **pattern** of radiant energy, and is then developed to form a mask. An **etching** process is undertaken to etch away the surface of the layer 6 through the mask. At the end of the photolithography process, the mask is typically removed.

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DOCUMENT-IDENTIFIER: US 6063953 A
TITLE: Chemical-sensitization photoresist composition

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20000516

DEPR:

In the positive-working **photoresist** composition of the invention comprising the resinous ingredient as the component (a1) and the acid-generating agent as the component (b), an acid is generated from the component (b) in the areas of the **photoresist** layer irradiated with actinic rays so that the acid-dissociable substituent groups in the component (a1) are dissociated to regenerate the hydroxy groups in the resin molecules resulting in an increase in the alkali-solubility of the component (a1) in the development treatment to selectively **remove the resist** layer in the exposed areas giving a positively patterned **resist** layer.

DEPR:

In the negative-working **photoresist** composition of the invention comprising the alkali-soluble resinous ingredient as the component (a2), the acid-generating agent as the component (b) and the acid-crosslinkable resinous ingredient as the component (c), an acid is also generated from the component (b) in the areas of the **photoresist** layer irradiated with actinic rays so that the acid-crosslinkable resinous ingredient serves for crosslinking of the component (a2) to decrease the alkali-solubility of the **resist** layer in the aqueous alkaline developer solution resulting in selective **removal of the resist** layer in the unexposed areas to give a negatively patterned **resist** layer.

DEPR:

It is usual that the chemical-sensitization photoresist composition is used in the form of a uniform solution prepared by dissolving the above described essential ingredients and optional additives in an organic solvent. Examples of suitable organic solvents include ketone compounds such as acetone, methyl ethyl ketone, cyclohexanone, methyl isoamyl ketone, 2-heptanone and the like, polyhydric alcohols and derivatives thereof such as ethyleneglycol, ethyleneglycol monoacetate, diethyleneglycol, diethyleneglycol monoacetate, propyleneglycol, propyleneglycol monoacetate, dipropyleneglycol and dipropyleneglycol monoacetate as well as monomethyl, monoethyl, monopropyl, monobutyl and monophenyl ethers of the above named glycols and glycol monoacetates and the like, cyclic ether compounds such as dioxane and the like and ester compounds such as methyl lactate, ethyl lactate, methyl acetate, **ethyl acetate**, **butyl acetate**, methyl pyruvate, ethyl pyruvate, methyl methoxypropionate, ethyl ethoxypropionate and the like. These organic solvents

can be used either singly or as a mixture of two kinds or more according to need.

DEPR:

A silicon wafer was uniformly coated with the thus prepared photoresist solution on a spinner followed by drying at 80.degree. C. for 90 seconds to give a dried photoresist layer having a thickness of 0.7 .mu.m. The resist layer was exposed to KrF excimer laser beams on a minifying projection exposure machine (Model NSR-2005EX8A, manufactured by Nikon Co.) in varied doses increased stepwise by an increment of 1 mJ/cm.sup.2 followed by a post-exposure baking treatment at 110.degree. C. for 90 seconds and then subjected to a development treatment in a 2.38% by weight aqueous solution of tetramethylammonium hydroxide at 23.degree. C. for 65 seconds followed by rinse for 30 seconds with water and drying. The photosensitivity of the composition represented by the minimum exposure dose, at which the resist layer on the exposed areas could be completely removed by the above described development treatment, was 5 mJ/cm.sup.2.